

STATUS OF CLAIMS ON APPEAL

Claims 1-6 and 16-25 are pending and are on appeal in the application. Claims 7-15 have been canceled.

STATUS OF AMENDMENTS

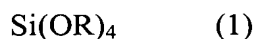
No amendment has been filed in response to the Office Action of January 14, 2009 which is a third action on the merits of the case.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is directed to a process for preparing a coating fluid containing a polysiloxane, as set forth in Claim 1, by:

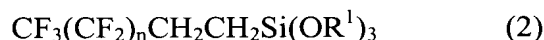
forming a reaction mixture comprising

a silicon compound (A) of formula (1):



wherein R is a C₁₋₅ alkyl group,

a silicon compound (B) of formula (2):



wherein R¹ is a C₁₋₅ alkyl group, and n is an integer ranging from 0 to 12,

a silicon compound (C) of formula (3):



wherein R² is a C₁₋₅ alkyl group, and m is an integer ranging from 1 to 5,

an alcohol (D) of formula (4):



wherein R³ is a hydrogen atom or a C₁₋₁₂ alkyl group, wherein the alkyl group is optionally substituted by one or more substituents of the same or different types selected from

the group consisting of a C₁₋₃ alkyl group, a C₁₋₃ hydroxyalkyl group, a C₂₋₆ alkoxyalkyl group, a C₂₋₆ hydroxyalkoxyalkyl group and a C₃₋₆ alkoxyalkoxyalkyl group, and oxalic acid (E),

wherein

- (i) the ratio of the silicon compound (B) per mol of the silicon compound (A) ranges from 0.05 to 0.43 ,
- (ii) the ratio of the silicon compound (C) per mol of the silicon compound (A) ranging from 0.01 to 0.20 mol,
- (iii) the ratio of the alcohol (D) per mol of the total alkoxy groups contained in the silicon compounds (A), (B) and (C) ranging from 0.5 to 100 mol and the ratio of the oxalic acid (E) per mol of the total alkoxy groups contained in the silicon compounds (A), (B) and (C) ranging from 0.2 to 2 mol, and

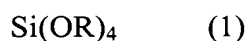
heating this reaction mixture at a temperature ranging from 40 to 180° C until the total amount of the silicon compounds (A), (B) and (C) remaining in the reaction mixture reaches at most 5 mol %, while maintaining a SiO₂ concentration ranging from 0.5 to 10 wt % as calculated from silicon atoms in the reaction mixture and in the absence of water.

Support for the invention as claimed may be found in the paragraph bridging pages 6 and 7 of the text of the application.

Another aspect of the invention is claimed in Claim 4 and is directed to a process for forming a coating film containing a polysiloxane by:

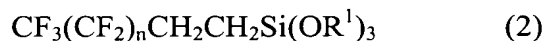
forming a reaction mixture comprising

a silicon compound (A) of formula (1):



wherein R is a C₁₋₅ alkyl group,

a silicon compound (B) of formula (2):



wherein R^1 is a C_{1-5} alkyl group, and n is an integer ranging from 0 to 12,

a silicon compound (C) of formula (3):



wherein R^2 is a C_{1-5} alkyl group, and m is an integer ranging from 1 to 5,

an alcohol (D) of formula (4):



wherein R^3 is a hydrogen atom or a C_{1-12} alkyl group, wherein the alkyl group is optionally substituted by one or more substituents of the same or different types selected from the group consisting of a C_{1-3} alkyl group, a C_{1-3} hydroxyalkyl group, a C_{2-6} alkoxyalkyl group, a C_{2-6} hydroxyalkoxyalkyl group and a C_{3-6} alkoxyalkoxyalkyl group, and

oxalic acid (E),

wherein

- (i) the ratio of the silicon compound (B) per mol of the silicon compound (A) ranges from 0.05 to 0.43 ,
- (ii) the ratio of the silicon compound (C) per mol of the silicon compound (A) ranging from 0.01 to 0.20 mol,
- (iii) the ratio of the alcohol (D) per mol of the total alkoxy groups contained in the silicon compounds (A), (B) and (C) ranging from 0.5 to 100 mol, and
- (iv) the ratio of the oxalic acid (E) per mol of the total alkoxy groups contained in the silicon compounds (A), (B) and (C) ranging from 0.2 to 2 mol; and

heating this reaction mixture at a temperature ranging from 40 to 180° C until the total amount of the silicon compounds (A), (B) and (C) remaining in the reaction mixture reaches at most 5 mol %, while maintaining a SiO_2 concentration ranging from 0.5 to 10 wt % as calculated from silicon atoms in the reaction mixture and in the absence of water

reaches at most 5 mol %, while maintaining a SiO₂ concentration ranging from 0.5 to 10 wt % as calculated from silicon atoms in the reaction mixture and in the absence of water

Support for the invention as claimed may be found in the paragraph bridging pages 6 and 7 of the text of the application.

Another aspect of the invention is claimed in Claim 17 and is directed toward having a refractive index ranging from 1.28 to 1.41 and a contact angle with water ranging from 90° to 115°, which is formed as adhered to a substrate surface by:

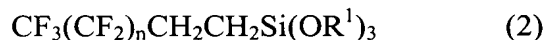
forming a reaction mixture comprising

a silicon compound (A) of formula (1):



wherein R is a C₁₋₅ alkyl group,

a silicon compound (B) of formula (2):



wherein R¹ is a C₁₋₅ alkyl group, and n is an integer of from 0 to 12,

a silicon compound (C) of formula (3):



wherein R² is a C₁₋₅ alkyl group, and m is an integer ranging from 1 to 5,

an alcohol (D) of formula (4):



wherein R³ is a hydrogen atom or a C₁₋₁₂ alkyl group, wherein the alkyl group is optionally substituted by one or more substituents of the same or different types selected from the group consisting of a C₁₋₃ alkyl group, a C₁₋₃ hydroxyalkyl group, a C₂₋₆ alkoxyalkyl group, a C₂₋₆ hydroxyalkoxyalkyl group and a C₃₋₆ alkoxyalkoxyalkyl group), and

oxalic acid (E),

wherein

(i) the ratio of the silicon compound (B) per mol of the silicon compound (A) ranges from 0.05 to 0.43 mol,

(ii) the ratio of the silicon compound (C) per mol of the silicon compound (A) ranges from 0.01 to 0.20 mol,

(iii) the ratio of the alcohol (D) per mol of the total alkoxy groups present in the silicon compounds (A), (B) and (C) ranges from 0.5 to 100 mol and the ratio of the oxalic acid (E) per mol of the total alkoxy groups contained in the silicon compounds (A), (B) and (C) ranges from 0.2 to 2 mol;

heating the reaction mixture at a temperature ranging from 40 to 180° C until the total amount of the silicon compounds (A), (B) and (C) remaining in the reaction mixture reaches at most 5 mol %, while maintaining a SiO₂ concentration ranging from 0.5 to 10 wt, as calculated from silicon atoms in the reaction mixture and while in the absence of water, and

forming a solution of a polysiloxane, and

applying a coating fluid comprising the polysiloxane solution on a substrate surface to form a coating, and

heat-curing the coating at a temperature ranging from 40 to 450° C.

Support for the invention as claimed may be found in the paragraph bridging pages 6 and 7 of the text of the application and in the preamble of original Claim 7.

Still another aspect of the invention is claimed in Claim 20 and is directed to a process for forming a coating film by:

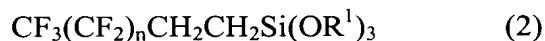
forming a reaction mixture comprising

a silicon compound (A) of formula (1):



wherein R is a C₁₋₅ alkyl group,

a silicon compound (B) of formula (2):



wherein R^1 is a C_{1-5} alkyl group, and n is an integer ranging from 0 to 12,

a silicon compound (C) of formula (3):



wherein R^2 is a C_{1-5} alkyl group, and m is an integer ranging from 1 to 5,

an alcohol (D) of formula (4):



wherein R^3 is a hydrogen atom or a C_{1-12} alkyl group, wherein the alkyl group is optionally substituted by one or more substituents of the same or different types selected from the group consisting of a C_{1-3} alkyl group, a C_{1-3} hydroxyalkyl group, a C_{2-6} alkoxyalkyl group, a C_{2-6} hydroxyalkoxyalkyl group and a C_{3-6} alkoxyalkoxyalkyl group), and

oxalic acid (E),

wherein

(i) the ratio of the silicon compound (B) per mol of the silicon compound (A) ranges from 0.05 to 0.43 mol,

(ii) the ratio of the silicon compound (C) per mol of the silicon compound (A) ranges from 0.01 to 0.20 mol,

(iii) the ratio of the alcohol (D) per mol of the total alkoxy groups contained in the silicon compounds (A), (B) and (C) ranges from 0.5 to 100 mol, and

(iv) the ratio of the oxalic acid (E) per mol of the total alkoxy groups contained in the silicon compounds (A), (B) and (C) ranges from 0.2 to 2 mol;

heating the reaction mixture at a temperature ranging from 40 to 180° C until the total amount of the silicon compounds (A), (B) and (C) remaining in the reaction mixture reaches at most 5 mol %, while maintaining a SiO_2 concentration ranging from 0.5 to 10 wt % as

calculated from silicon atoms in the reaction mixture and in the absence of water forming a solution of a polysiloxane; and

applying a coating fluid comprising the polysiloxane solution on a substrate surface to form a coating;

drying the coating at a temperature ranging from 40 to 150° C, and

aging the coating at a temperature of from 20 to 100° C for curing, to form a coating film having a refractive index of from 1.28 to 1.41 and a contact angle with water ranging from 90° to 115°, as adhered to the substrate surface.

Support for the invention as claimed may be found in the paragraph bridging pages 6 and 7 of the text of the application and in the preamble of original Claim 7 and in the text on page 18, lines 7-14.

Another aspect of the invention is claimed in Claim 23 and is directed to a process for forming a coating film having a refractive index of from 1.28 to 1.41 and a contact angle with water ranging from 90° to 115°, which is formed as adhered to a substrate surface by:

forming a reaction mixture comprising

a silicon compound (A) of formula (1):



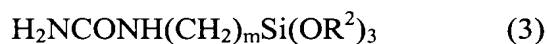
wherein R is a C₁₋₅ alkyl group,

a silicon compound (B) of formula (2):



wherein R¹ is a C₁₋₅ alkyl group, and n is an integer ranging from 0 to 12,

a silicon compound (C) of formula (3):



wherein R² is a C₁₋₅ alkyl group, and m is an integer ranging from 1 to 5,

an alcohol (D) of formula (4):



wherein R^3 is a hydrogen atom or a C_{1-12} alkyl group, wherein the alkyl group is optionally substituted by one or more substituents of the same or different types selected from the group consisting of a C_{1-3} alkyl group, a C_{1-3} hydroxyalkyl group, a C_{2-6} alkoxyalkyl group, a C_{2-6} hydroxyalkoxyalkyl group and a C_{3-6} alkoxyalkoxyalkyl group), and

oxalic acid (E),

wherein

(i) the ratio of the silicon compound (B) per mol of the silicon compound (A) ranges from 0.05 to 0.43 mol,

(ii) the ratio of the silicon compound (C) per mol of the silicon compound (A) ranges from 0.01 to 0.20 mol,

(iii) the ratio of the alcohol (D) per mol of the total alkoxy groups contained in the silicon compounds (A), (B) and (C) ranges from 0.5 to 100 mol, and

(iv) the ratio of the oxalic acid (E) per mol of the total alkoxy groups contained in the silicon compounds (A), (B) and (C) ranges from 0.2 to 2 mol;

heating the reaction mixture at a temperature ranging from 40 to 180° C until the total amount of the silicon compounds (A), (B) and (C) remaining in the reaction mixture reaches at most 5 mol %, while maintaining a SiO_2 concentration ranging from 0.5 to 10 wt % as calculated from silicon atoms in the reaction mixture and in the absence of water forming a solution of a polysiloxane; and

applying a coating fluid comprising the polysiloxane solution on a substrate surface to form a coating;

drying the coating at a temperature ranging from 40 to 150° C, and

aging the coating at a temperature of from 20 to 100° C for curing, to form a coating film.

from the group consisting of a C₁₋₃ alkyl group, a C₁₋₃ hydroxyalkyl group, a C₂₋₆ alkoxyalkyl group, a C₂₋₆ hydroxyalkoxyalkyl group and a C₃₋₆ alkoxyalkoxyalkyl group), and

oxalic acid (E),

wherein

(i) the ratio of the silicon compound (B) per mol of the silicon compound (A) ranges from 0.05 to 0.43 mol,

(ii) the ratio of the silicon compound (C) per mol of the silicon compound (A) ranges from 0.01 to 0.20 mol,

(iii) the ratio of the alcohol (D) per mol of the total alkoxy groups present in the silicon compounds (A), (B) and (C) ranges from 0.5 to 100 mol, and

(iv) the ratio of the oxalic acid (E) per mol of the total alkoxy groups contained in the silicon compounds (A), (B) and (C) ranges from 0.2 to 2 mol;

heating the reaction mixture at a temperature ranging from 40 to 180° C until the total amount of the silicon compounds (A), (B) and (C) remaining in the reaction mixture reaches at most 5 mol %, while maintaining a SiO₂ concentration ranging from 0.5 to 10 wt % as calculated from silicon atoms in the reaction mixture and in the absence of water forming a solution of a polysiloxane;

applying a coating fluid comprising the polysiloxane solution on a substrate surface to form a coating;

drying the coating at a temperature ranging from 40 to 150° C and aging the coating at a temperature ranging from 20 to 100° C for curing.